

Oracle® Enterprise Manager Ops Center

Using Complex Plans

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This guide provides an end-to-end example for how to use Oracle Enterprise Manager Ops Center.

Introduction

This guide describes how to combine simple plans and profiles to create complex plans.

Complex plans let you consistently perform multi-step procedures. Each complex plan contains one or more steps, which can be profiles or other plans. The plan specifies the targets on which these tasks are run and in what order.

For example, this guide uses an Install Server plan, which includes an OS Provisioning and OS Configuration profile to create a new OS, a custom monitoring profile to apply to the new OS, and an operational profile that creates a new directory on the OS and modifies its access. Other complex plans can perform tasks such as installing LDOMs on newly installed servers.

You will complete the following tasks:

- Create an OS Provisioning profile
- Create an OS Configuration profile
- Create a new monitoring policy
- Create an operational profile to create and modify a new directory
- Create a complex plan to install a server, including installing the OS, applying the monitoring policy, and applying the operational profile

See [Related Articles and Resources](#) for links to related information and articles about profiles and plans.

What You Will Need

You will need the following:

- Oracle Enterprise Manager Ops Center Enterprise Controller and Proxy Controller installed on an Oracle Solaris 11 OS.
- One or more hardware assets
- Oracle Solaris 11 Software Update Library with Oracle Solaris 11.1 SRU 9.6 content: The examples in this guide use an Oracle Solaris 11.1 OS. Creating a complex plan using another OS requires an image for that OS, and does not

require that the Enterprise Controller or Proxy Controller be installed on Oracle Solaris 11.

- A user with the Plan/Profile Admin role

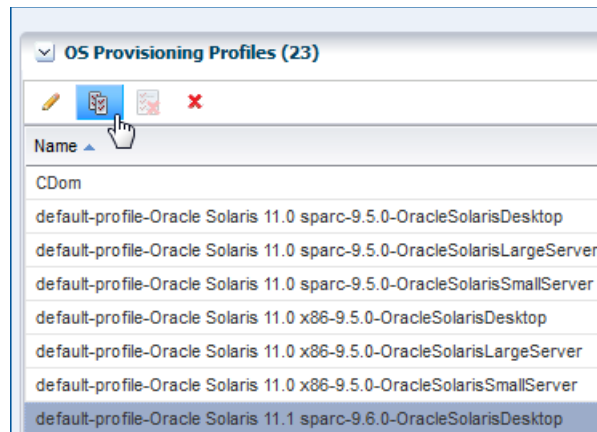
Create an OS Provisioning Profile

You can use the default profiles, copy a default profile to create a new profile, or create a new profile. One of the advantages to copying a default profile is that the correct OS image, OS image version, and software group are pre-selected based on the image. This example shows how to copy a default profile to create a new profile. The default profile that we are copying is called *default-profile-Oracle Solaris 11.1 SPARC-9.6-OracleSolarisDesktop*.

1. Expand **Plan Management** in the Navigation pane, then select **OS Provisioning** in the **Profiles and Policies** tree.

A list of OS profiles appears in the center pane. Resize the column to view the entire profile name.

2. Select the default profile for the image. In this case, *default-profile-Oracle Solaris 11.1 SPARC-9.6-OracleSolarisDesktop*. Click the **Copy Profile** icon in the center pane.



3. Rename the profile from the default profile name. Revise and expand the profile description, if needed. The subtype and target type are based on the image and are not editable. Click **Next**.

Identify Profile

*** Name:** S11.1 SPARC-9.6.0-Desktop

Description: Oracle Solaris 11.1 SPARC-9.6.0 Desktop profile based on the default.

Subtype: Subtype
Solaris SPARC

Target Type: Target Type
OSP SPARC

4. On the Specify OSP Parameters page, the OS image, OS Image Version, and Software group are already selected based on the image. This example does not

use a Solaris 11 Update Profile, but one can be used during this step to add additional packages to the new OS. Click **Next**.

Specify OSP Parameters * Indicates

Select an OS image from the list of images available.
Select one system software group and any optional feature software groups that this OS profile i
Ctrl+Click and Shift+Click to select multiple software groups.

* OS Image: Orade Solaris 11.1 sparc (AI) ▼

* OS Image Version: SRU 9.6.0 ▼

* Software Group:

- System Software Groups
 - pkg://solaris/group/system/solaris-small-server
 - pkg://solaris/group/system/solaris-large-server
 - pkg://solaris/group/system/solaris-desktop
- Feature Software Groups
 - pkg://solaris/group/feature/trusted-desktop
 - pkg://solaris/group/feature/storage-server
 - pkg://solaris/group/feature/storage-nas

Include Custom Scripts

Solaris 11 Update Profile: ▼

5. Specify the OS Setup parameters. Edit the default values, as needed. Click **Next**.

Specify OS Setup

Specify language, time zone, terminal type, console and root password for the OS.

Language: English (7-bit ASCII) ▼

Time Zone: GMT ▼

Terminal Type: vt100

Console Serial Port: ttya ▼

Console Baud Rate: 9600 ▼

NFS4 Domain: dynamic

Root Password: ●●●●

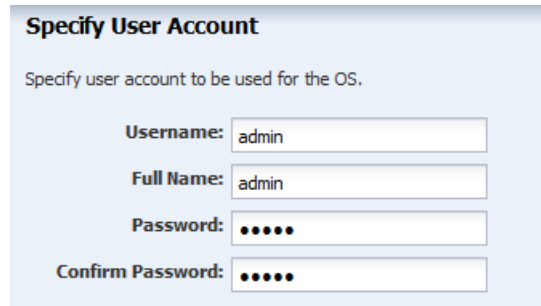
Confirm Password: ●●●●

Manual Net Boot

- Language: Select a language from the list.
- Time Zone: Specify the time zone for the OS.
- Terminal Type: Select a terminal type from the list.
- Console Serial Port: To monitor the installation using a serial connection, select the correct console serial port device.
- Console Baud Rate: To monitor the installation using a serial connection, select the correct serial port device baud rate.

- NFS4 Domain: Enter the NFS4 domain name that the target system will use. The dynamic value for NFSv4 domain name enables the NFSv4 domain to be derived dynamically, at run time, based on the naming service configuration. You can also provide valid domain name to hard code the value for NFSv4 domain.
- Password: Enter the root password for the root user on systems provisioned using this profile. Re-enter the password for confirmation. The default password is *admin*.

6. Specify the User Account details, then click **Next**.



Specify User Account

Specify user account to be used for the OS.

Username:

Full Name:

Password:

Confirm Password:

7. Click **Next**. This example does not use an iSCSI Disk for OS provisioning.



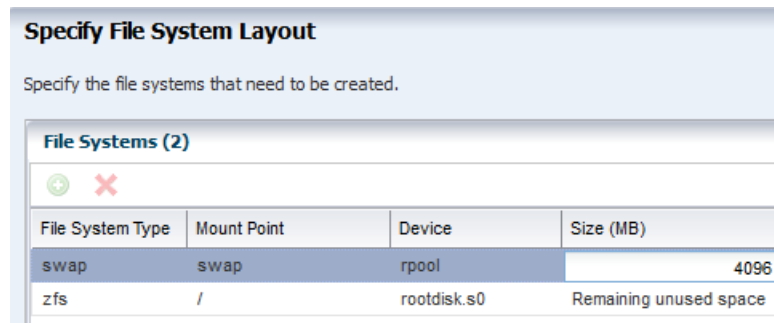
Specify iSCSI Disk Usage

Specify if iSCSI disk is used for OS provisioning.

Use iSCSI Disk

8. Review and edit the default file system layout, then click **Next**.

This example uses the default file system layout. To specify changes to the default File System space, click the size field for the file system, and redefine.



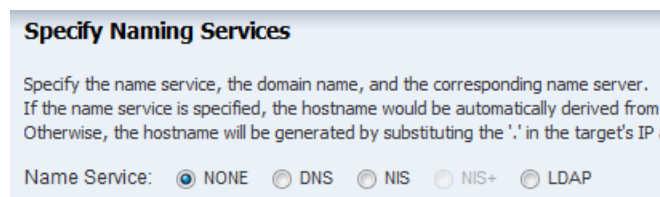
Specify File System Layout

Specify the file systems that need to be created.

File Systems (2)

File System Type	Mount Point	Device	Size (MB)
swap	swap	rpool	4096
zfs	/	rootdisk.s0	Remaining unused space

9. Select **None**, then click **Next** to skip using a naming service.



Specify Naming Services

Specify the name service, the domain name, and the corresponding name server. If the name service is specified, the hostname would be automatically derived from it. Otherwise, the hostname will be generated by substituting the '.' in the target's IP address with the domain name.

Name Service: NONE DNS NIS NIS+ LDAP

To use a naming service, select the service and complete the required fields.

10. Review the parameters and click **Finish** to create the OS Provisioning profile for provisioning Oracle Solaris 11 operating system.

Summary

Review the properties of the profile. Click Finish to save the profile.

Name: s11.1 sparc-9.6.0-OracleSolarisDesktop

Description: OS Provisioning Profile for Oracle Solaris 11.1 sparc-9.6.0 Oracle Solaris Desktop. Standard desktop user and install parameters

Target Type: OSP SPARC

OS Image: Oracle Solaris 11.1 sparc (SRU 9.6.0) (AI)

Software Group: pkg://solaris/group/system/solaris-desktop

Language: English (7-bit ASCII)

Time Zone: GMT

Terminal Type: vt100

Console Serial Port: ttya

Console Baud Rate: 9600

NFS4 Domain: dynamic

Manual Net Boot:

Solaris 11 Update Profile:

Username: admin

Full Name: admin

Use iSCSI Disk:

File Systems (2)

The profile appears in the center pane and in the Profiles and Policies section of **Plan Management**.

s11.1 SPARC-9.6.0-OracleSolarisDesktop

Details Referrers Version History

Name: s11.1 SPARC-9.6.0-OracleSolarisDesktop **Subtype:** Solaris SPARC
Description: OS Provisioning Profile for Oracle Solaris 11.1 SPARC-9.6.0 Oracle Solaris Desktop. Standard desktop user and install parameters **Version:** 1
Last Modified: 10/28/2013 9:06:22 am MDT
Target Type: OSP SPARC

Profile Details

OS Image: Oracle Solaris 11.1 sparc (SRU 9.6.0) (AI) **Language:** English (7-bit ASCII)
Solaris 11 Update Profile: **Terminal Type:** vt100
Time Zone: GMT **Console Baud Rate:** 9600
Console Serial Port: ttya
NFS4 Domain: dynamic
 Manual Net Boot
 Save NVRAMRC values
Software Group: pkg://solaris/group/system/solaris-desktop
Name Service: NONE
Username: admin Use iSCSI Disk
Full Name: admin

File Systems (2)

File System Type	Mount Point	Device	Size (MB)
swap	swap	rpool	4096
zfs	/	rootdisk.s0	Remaining unused space

Create an OS Configuration Profile

This example shows how to create an OS Configuration profile to define how the OS is managed (with or without an agent) and the networking options. The profile is not SRU-specific.

1. Expand **Plan Management** in the Navigation pane.
2. Select **OS Configuration** in the **Profiles and Policies** tree. A list of existing OS Configuration profiles appears in the center pane.
3. Click **Create Profile** in the Actions or center pane.
4. Name the profile and enter a profile description. Select **Solaris** and **OSP SPARC** as the Subtype and Target Type. Click **Next**.

Identify Profile

* **Name:** SPARC desktop

Description: Solaris OS SPARC Desktop configuration

* **Subtype:** Subtype

- Oracle VM Server for SPARC
- Logical Domain
- Oracle Linux
- Oracle VM Server for x86
- Red Hat Linux
- SUSE Linux
- Solaris**
- JET Template

Target Type: Target Type

- OSP SPARC
- OSP x86

- The default setting is to automatically manage the OS with Oracle Enterprise Manager Ops Center and Deploy the Agent Controller. This option provides the most robust management capabilities. Deselect MPxIO for this example, as we do not want to enable SAN storage connectivity for the desktop system that is the target for this profile. Click **Next**.

OS Management

Automatically Manage with Oracle Enterprise Manager Ops Center

Deploy Agent Controller

Periodically probe the asset. SSH credentials are required, choose from an existing set or create a new set.

SSH:

Enable Multiplexed I/O (MPxIO)

- Select **None** for the Networking Services and click **Next**.

Specify Networking

Select the network interfaces that the target system will use after the OS is configured.

Link Aggregation and IPMP are only available for Oracle Solaris operating systems.

Use Link Aggregation

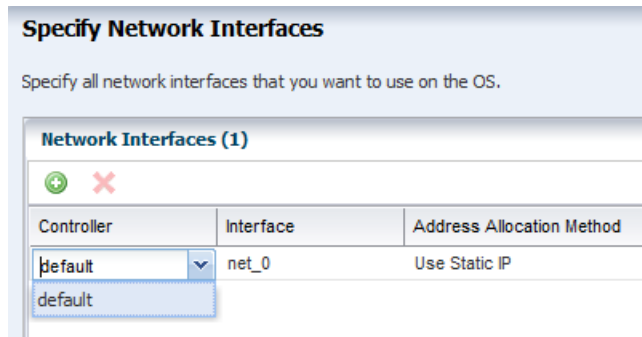
Use IPMP

None

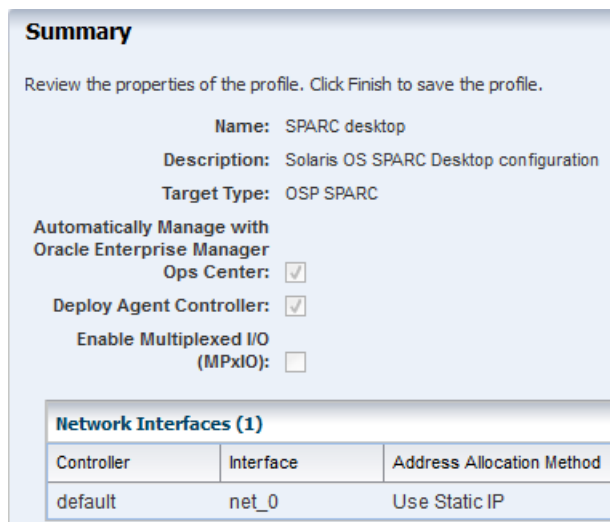
- Select a network interface that you want to use in the configuring process and Click **Next**.

The network interface is the interface that you want to use on the operating system. This example uses the default net_0 interface and Static IP Address

Allocation. You define the IP address when you apply the OS provisioning plan to a target.



8. Review the summary of the parameters selected for configuring Oracle Solaris 11 operating system, then click **Finish** to create the OS Configuration profile.



Expand the Plan Management section. In the section OS Configuring of Profiles and Policies section you can select the OS configuration profile to view its details in the center pane.

Creating a Monitoring Policy

A monitoring profile sets the monitoring parameters for an asset. Oracle Enterprise Manager Ops Center generates an alert for an asset if one of the monitored properties, such as the file system usage or CPU usage, exceeds the values specified in the monitoring profile.

By default, pre-generated monitoring profiles are applied to assets. However, you can create modified versions of these profiles and apply them to assets. In this example, you copy the default OS monitoring policy and edit the file system usage threshold to create a new policy.

1. Expand **Plan Management** in the Navigation pane, then click **Monitoring Policies**.
2. Select the OC - Operating System policy, then click the **Copy Policy** icon.

Name	Description	Subtype	Target Type	Last Modified	Default
OC - Crassis	Generic Crassis	Crassis	Crassis	10/09/2013 10:51...	Yes
OC - CiscoSwitch	Ethernet switch	Switch	Cisco Catalyst Switches	10/09/2013 10:51...	Yes
OC - Dynamic System D...	Generic Dynamic...	Dynamic System Domain	Servers	10/09/2013 10:51...	Yes
OC - Exadata Storage S...	Exadata Storage ...	Exadata Storage Server	Exadata Storage Server	10/09/2013 10:51...	Yes
OC - File Server	Generic File Serv...	File Server	File Server	10/09/2013 10:51...	Yes
OC - Global Zone	Generic Solaris C...	Global Zone	Operating Systems	10/09/2013 10:51...	Yes
OC - iSCSI Storage Array	Generic iSCSI St...	iSCSI Storage Array	IscsiStorageArray	10/09/2013 10:51...	Yes
OC - Local Library	Local Library	Local Library	Local Library	10/09/2013 10:51...	Yes
OC - Logical Domain	Logical Domain	Logical Domain	Servers	10/09/2013 10:51...	Yes
OC - M-Series	Generic M-Series	M-Series	M-Series	10/09/2013 10:51...	Yes
OC - NAS Library	NAS Library	NAS Library	NAS Library	10/09/2013 10:51...	Yes
OC - Non-global Zone	Generic Non-glob...	Non-global Zone	Operating Systems	10/09/2013 10:51...	Yes
OC - Operating System	Generic Operatin...	Operating System	Operating Systems	10/09/2013 10:51...	Yes
OC - Oracle VM Manager	Oracle VM Mana...	OvmManager	Oracle VM Manager	10/09/2013 10:51...	Yes

3. Enter a name and description for the new policy, then click **Next**. In this example, we use the name **Operating System - Group 1**.

Identify Policy * Indicates Required Field

*** Name:**

Description:

Subtype:

Target Type:

4. Review the details, then click **Finish**.

Summary

Review the properties of the profile. Click Finish to save the profile.

Name: Operating System - Group 1

Description: Operating System policy for assets in Group 1

Target Type: Operating Systems

Alert Monitoring Rules	Enabled ?
CPU Usage Percentage	Yes
Memory Usage Percentage	Yes
Swap Usage Percentage	Yes
File System Reachability	Yes
File System Used Space Percentage	Yes
System Load 15-Minute Average Per CPU Core	Yes
Disk IO Utilization Percentage	Yes
Disk IO Queue Length	Yes
Process CPU Utilization Percentage	Yes
Operating System Reachability	Yes

The new policy is displayed in the Monitoring Policies section.

5. Select the new policy.

The policy details are displayed.

Name: Operating System - Group 1 **Subtype:** Operating System
Description: Operating System policy for assets in Group 1 **Nature:** User defined
Target Type: Operating Systems **Last Modified:** 10/14/2013 11:08:19 am MDT

Default monitoring policy for assets matching subtype and target type

Policy Details

Alert Monitoring Rules	Alert Limits	Enabled ?
BooleanControl Monitoring Rules (1)		
File System Reachability Immediate Action: N/A	Critical: false	Yes
Reachability Monitoring Rules (1)		
Operating System Reachability Immediate Action: N/A		Yes
Threshold Monitoring Rules (8)		
CPU Usage Percentage Immediate Action: N/A	Warning: 90.0	Yes
Disk IO Queue Length Immediate Action: N/A	Warning: 3.00	Yes
Disk IO Utilization Percentage Immediate Action: N/A	Warning: 95	Yes
File System Used Space Percentage Immediate Action: N/A	Critical: 95.0 Warning: 80.0	Yes
Memory Usage Percentage Immediate Action: N/A	Warning: 100.0	Yes
Process CPU Utilization Percentage	Warning: 90.0	Yes

6. Select the **File System Used Space Percentage** rule and click **Edit Alert Monitoring Rule Parameters**.
7. Edit the value of the Critical Threshold to 85% and the value of the Warning Threshold to 70%, then click **Apply**.

Configure Alert Rule Parameters

Rule Type: Threshold
Monitored Attribute: FileSystemUsages.name=*.usedSpacePercentage
Monitoring Rule Name: File System Used Space Percentage
Description: -

Monitor for alert limits continuously
 Monitor for alert limits at specific time, start at: End:

Generate alert after: 45 Minutes

Severity	Monitored Attribute	Operator	Value
Critical	FileSystemUsages.name=*.usedSpacePercentage	>	85.00
Warning	FileSystemUsages.name=*.usedSpacePercentage	>	70.00
Info	FileSystemUsages.name=*.usedSpacePercentage	>	

Immediate Action:

Creating an Operational Profile

An Operational Profile performs specific operations, defined by a shell script, on a target system.

An operational profile can carry out any action that can be included in a shell script, such as deploying thresholds onto a managed resource, or performing state changing actions such as shutting down all logical domains and then shutting down an Oracle VM Server for SPARC. The scripts in an operational profile can run on any managed system that contains a remote agent. These scripts are executed with root permissions.

Perform the following steps to create an operational profile. In this example, the operational profile will create a new directory, then modify the directory's permissions.

1. Expand **Plan Management** in the Navigation pane, then click **Operational Profiles**.
2. Click **Create Profile**.
3. Name the new profile and add a description. In this example, use the name Add Company File. Select the Operating System subtype, then click **Next**.

Identify Profile * Indicates Required Field

* **Name:** Add Company File

Description: Adds and sets permissions for company file

Create an operational plan for this profile.

* **Subtype:** Subtype
Boot Environment
Global Zone
Logical Domain
Oracle VM Server for SPARC
M-Series
Network
Non-global Zone
Operating System
Other
Virtual Machine
Oracle VM Server for x86
Server
Chassis
Server Pool

4. Define the script, then click **Next**.
 - a. Select the Remote Shell type.
 - b. Define the time out parameters.
 - c. Enter the script in the Script field:

```
#!/bin/bash
mkdir /var/tmp/company
chmod 776 /var/tmp/company
```

Script * Indicates Required Field

Operation Type: Remote Shell

Script File: Select a file to upload **Browse...**

Load Script

*** Time Out:** 60
Minutes

*** Script:**

```
#!/bin/bash
mkdir /var/tmp/company
chmod 776 /var/tmp/company
```

5. The Specify Additional Variables page is displayed. Click **Next**.
6. The Summary page is displayed. Review the profile, then click **Finish**.

Summary

Review the properties of the profile. Click Finish to save the profile.

Name: Add Company File

Description: Adds and sets permissions for the company file

Target Type: All Assets

Script Type: RemoteShell

Time out: 3600 Seconds

Script:

```
#!/bin/bash
mkdir /var/tmp/company
chmod 776 /var/tmp/company
```

Additional Variables:

Variable Name	Input at Execution	Value	Hint

Creating a Complex Plan

A complex plan combines multiple existing profiles and plans into a larger job.

In this example, we will create an Install Server plan, which will run first the OS Provisioning plan that we edited, followed by the edited monitoring profile, followed by the operational profile to add a directory and modify its permissions.

Perform the following steps to create this plan:

1. Expand **Plan Management** in the Navigation pane, then click **Install Server** in the Deployment Plans section.
2. Click **Create Plan from Template** in the Actions pane.
3. Name the new plan and add a description. Select Stop at Failure for the failure policy.

Oracle Enterprise Manager Ops Center - Create a Deployment Plan

Create a Deployment Plan ? ORACLE

* Indicates Required Field

* Plan Name:

Description:

Failure Policy: Stop at failure Complete as much as possible

Target Type: Servers

Template Name: Install Server

Step	Profile/Plan Type	Associated Profile/Deployment Plan	Guests to Create	Number of Results	Assigned Targets
OS Provision (Required step)	OS Provisioning Profile		0	0	
OS Config (Required step)	OS Configuration Profile		0	-	
Update BIOS	BIOS Profile	Do not include this step	0	0	
Update Configuration	Not Required		0	0	
Execute Pre-Install	Update Script Profile	Do not include this step	0	0	
Update OS	Software Update Profile	Do not include this step	0	0	

Save Cancel

4. In the OS Provision (Required step) row, select the S11.1SPARC-9.6.0-Desktop OS Provisioning profile.

Step	Profile/Plan Type	Associated Profile/Deployment Plan	Guests to Create	Number of Results	Assigned Targets
OS Provision (Required step)	OS Provisioning Profile	S11.1 SPARC-9.6.0-Desktop v1 (Solaris S...	0	0	
OS Config (Required step)	OS Configuration Profile		-	-	
Update BIOS	BIOS Profile	Do not include this step	0	0	
Update Configuration	Not Required		-	0	
Execute Pre-Install	Update Script Profile	Do not include this step	0	0	
Update OS	Software Update Profile	Do not include this step	0	0	

5. In the OS Config (Required step) row, select the SPARC desktop OS Configuration plan.

Step	Profile/Plan Type	Associated Profile/Deployment Plan	Guests to Create	Number of Results	Assigned Targets
OS Provision (Required step)	OS Provisioning Profile	S11.1 SPARC-9.6.0-Desktop v1 (Solaris S...	0	0	0
OS Config (Required step)	OS Configuration Profile	SPARC_desktop v1 (Solaris)	1	-	-
Update BIOS	BIOS Profile	Do not include this step	0	0	0
Update Configuration	Not Required		0	1	
Execute Pre-Install	Update Script Profile	Do not include this step	0	0	0
Update OS	Software Update Profile	Do not include this step	0	0	0

6. In the Operation row, select the Add Company File operational profile.

Step	Profile/Plan Type	Associated Profile/Deployment Plan	Guests to Create	Number of Results	Assigned Targets
Update OS	Software Update Profile	Do not include this step	0	0	0
Install Software	Software Installation Profile	Do not include this step	0	0	0
Update Software	Software Update Profile	Do not include this step	0	0	0
Execute Post-Install	Update Script Profile	Do not include this step	0	0	0
Operation	Operational Profile	Add Company File v1 (Operating System)	0	1	
Monitoring	Monitoring Policy	Do not include this step	0	0	0
Create Oracle Solaris Zones	Oracle Solaris Zone Profile	Do not include this step	1	-	-

7. In the Monitoring row, select the Operating System - Group 1 monitoring profile.

Step	Profile/Plan Type	Associated Profile/Deployment Plan	Guests to Create	Number of Results	Assigned Targets
Update OS	Software Update Profile	Do not include this step	0	0	0
Install Software	Software Installation Profile	Do not include this step	0	0	0
Update Software	Software Update Profile	Do not include this step	0	0	0
Execute Post-Install	Update Script Profile	Do not include this step	0	0	0
Operation	Operational Profile	Add Company File v1 (Operating System)	0	1	
Monitoring	Monitoring Policy	Operating System - Group 1 v1 (Operatin...	0	1	
Create Oracle Solaris Zones	Oracle Solaris Zone Profile	Do not include this step	1	-	-

8. Review the plan, then click **Save**.

Related Articles and Resources

See the *Oracle Enterprise Manager Ops Center Feature Reference Guide* for information about plans and profiles. This document is available in the Oracle Enterprise Manager Ops Center Documentation Library at http://docs.oracle.com/cd/E40871_01/index.htm.

See the Operate How To library at http://docs.oracle.com/cd/E40871_01/nav/operatehowto.htm for more information about using profiles and plans in your environment.

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